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At 1^h 28^m A.M. the eclipse was announced to become total, but here the Moon did not become wholly involved in the shadow.* The white strip of Moon visible at the total eclipse travelled round the northern limb of the Moon as the eclipse proceeded.

At 2 A.M. clouds cleared a little, and it could be seen by its coppery tint that the Moon was passing gradually out of the very dark part of the Earth's shadow-cone into a lighter part, in which the usual coppery-red light was bright enough to illuminate the Moon. On the northern side of the Moon, and extending upwards, the red or coppery colour seemed to involve three-fourths of the Moon, and a few minutes later—2^h 10^m—the Moon had passed altogether out of the dark shadow, and the whole of it was visible in red light. At 2^h 12^m, the end of total eclipse, the white patch already referred to was on the N.E. side, and the colours on the Moon were unusually beautiful. A minute white crescent on the N.E. was fringed by greenish-grey light, which seemed to extend the crescent half round the Moon and hold in its grasp a brilliant coppery-red ball, the whole Moon, of which the lightest red was next the greenish-grey crescent, presenting altogether the most beautiful view of an eclipsed Moon that I have ever seen. At 2^h 30^m A.M. clouds again covered the Moon until six minutes past 3 A.M. At 3^h 8^m A.M. another photograph was taken. The coppery colour had gone, and the shadow on the Moon looked nearly as black as it did at the beginning of the eclipse. At 3^h 24^m A.M. another photo was taken. The last contact was observed 3^h 26^m A.M., and the penumbra still cast a faint shadow over part of the Moon, and three minutes later clouds again claimed possession. Six successful photographs of the Moon were obtained.

Observatory, Sydney N.S.W.:
1892 *November* 5.

Estimations of Magnitude of Nova Aurigæ, made at the Radcliffe Observatory, Oxford. By E. J. Stone, M.A., F.R.S., Radcliffe Observer.

Estimations of the magnitude of the Nova have been made on the following nights: 1892 November 18, 26; December 9, 12, 22, 23; and 1893 January 2 and 10. The mean magnitude given by these observations is 9·7, and it would appear that no sensible changes of magnitude have taken place during the interval over which these observations extend.

Radcliffe Observatory:
1893 *January* 12.

[* The Superintendent of the *N. A.* kindly informs us that "the Moon's centre was north of the shadow's centre, so that the Moon's north limb was close to the edge of the shadow, and small errors in adopted values might make it visible. The diameter of the shadow is increased in a certain proportion for one thing, but this assumed enlargement probably varies with the atmospheric conditions at the time of each eclipse."—SECRETARIES.]

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Observations of the Variable Star S Ursae Majoris. R.A. xii. 39. 7; Dec. 61° 41′ 8 N. By Cuthbert E. Peek, M.A.

The above is one of the long-period variable stars under regular observation, and the series just presented covers a period of six years, extending from 1886 July to 1892 June.

The sketch diagram appended shows most of the stars near the variable; several are conspicuous, and the field can be identified without difficulty. Six of the stars are to be found in Argelander's chart, and using these as a basis the magnitudes of the remainder were determined by taking the mean of several series of careful eye estimations. This was done in 1886, and on the receipt of Prof. Pickering's work, *Variable Stars of Long Period,* in 1891, several of the Rousdon magnitudes of these comparison stars were found to be identical with those determined at Harvard Observatory, the mean difference being ·5 magnitude in excess. The necessary correction has been applied throughout; these observations, therefore, are strictly comparable with those of Harvard College. It will be seen from the annexed table that the Harvard College magnitudes are only estimated to the nearest whole magnitude.

The light varies to the extent of about five magnitudes, the brightest maximum being 7·3 magnitude, and the faintest minimum 12·5 magnitude. It is always more or less red, and generally well defined, in contradistinction to some other variables which on several occasions have been noted as somewhat similar to a planetary nebula when other stars in the field could be brought to an absolutely sharp focus.

The observations were made with a $6\frac{4}{10}$ inch achromatic equatoreal telescope, the eyepieces commonly in use giving powers of 36, 80, and 136.

Argelander's method of observation has been followed throughout, the usual practice being to compare the variable with five other stars, the mean resulting magnitude being entered for the date given. Observations have been made on 146 nights, and 10 maxima and minima have been recorded. The dates of the maxima and minima given are the actual dates when the greatest and least brightness was observed. On the diagram the dots representing observations are simply joined by straight lines.

Several interesting irregularities are shown. The abrupt pause in the increase, and tendency to form small maxima, are well shown in 1887 February and March, and again in September and October. The pause in 1888 March and April was unusually long. About the maxima in 1890 November and 1891 July the light curve was much flatter than usual and the irregularities greatly diminished. At the maximum in 1892 March the contrary was observed, and the curve was more sudden than at any other maximum of this series. The light at various maxima has been observed to range from 7·5 to 8·2 magnitude.

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